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10/759,973	01/16/2004	Richard A. Hogle	M03A445	8329

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The BOC Group, Inc.
575 MOUNTAIN AVENUE
MURRAY HILL, NJ 07974-2082

EXAMINER	
BOYER, RANDY	
ART UNIT	PAPER NUMBER
1797	
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/759,973	HOGLE ET AL.	
	Examiner	Art Unit	
	RANDY BOYER	1797	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *11 April 2008*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-7,10-16,18 and 19* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-7,10-16,18 and 19* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Response to Amendment

1. Examiner acknowledges Applicant's response filed 11 April 2008 containing amendments to the claims and remarks.

2. Claims 1-7, 10-16, 18, and 19 are pending.

3. Examiner acknowledges that Applicant's amendment to claims 4, 7, and 10-12 are sufficient to overcome the previous objections. Likewise, Applicant's amendment to claim 1 is sufficient to overcome the previous rejection under 35 U.S.C. 112, second paragraph.

4. The previous rejections of claims 1-7, 10-16, and 18 under 35 U.S.C. 103(a) are maintained. Likewise, new claim 19 is rejected under 35 U.S.C. 103(a). The rejections follow.

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office Action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which

> said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

6. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

7. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

8. Claims 1-7, 10-16, 18, and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tojo (EP 1367149 A1) in view of Hartmann (DE 4136885 C1). Alternatively, claims 1-7, 10-16, 18, and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tojo (EP 1367149 A1) in view of Hartmann (DE 4136885 C1), as evidenced by Hodgson (US 5,378,324) or Holt (US 3,287,171).

9. With respect to claim 1, Tojo discloses an apparatus (see Tojo, Fig. 1) comprising an electrolyte aerosol removal unit (14) connected to a fluorine generator (1)

and containing an aerosol removal composition (e.g. sodium fluoride or soda lime) (see Tojo, column 7, lines 17-29) wherein the electrolyte aerosol removal unit is adapted to allow the fluid to flow there through (see Tojo, column 5, lines 25-27).

Tojo does not explicitly disclose wherein the apparatus further comprises a catalytic unit including a catalytically activated combustion surface, the catalytic unit adapted to be positioned inside of a forced convection duct, the catalytic unit fluidly connected to the aerosol removal unit by a conduit, the catalytically activated combustion surface adapted to combust the hydrogen in an oxygen-containing stream; or wherein the apparatus is useful for disposal of hydrogen.

However, Hartmann discloses an apparatus (see Hartmann, Fig. 1) useful for the disposal of hydrogen (see Hartmann, English Abstract) wherein the apparatus comprises a catalytic unit (6) comprising a catalytically activated combustion surface (see Hartmann, column 4, lines 34-43), and wherein the catalytic unit (6) is adapted to be positioned inside of a forced convection duct (20). In addition, Hartmann explains that the apparatus of his invention is preferably used to dispose of hydrogen in hydrogen-containing mixtures such as that generated during an electrolyte process (e.g. hydrogen produced in the fluorine generation process of Tojo) (see Hartmann, column 1, lines 3-8). Hartmann also notes that his apparatus provides for the safe disposal of hydrogen without the loss of essential process chemicals (see Hartmann, English Abstract; and column 1, lines 40-46). Finally, Examiner notes that Hartmann is not particularly limited with respect to the form of catalyst to be used in his catalytic unit. In this regard, Holt discloses the use of platinum and rhenium catalytic materials supported

on metal screens for use in oxidation reactions, e.g. the catalytic oxidation reaction carried out in the catalytic unit of Hartmann (see Holt, column 1, lines 10-18; and column 3, lines 6-18).

Therefore, the person having ordinary skill in the art of hydrogen disposal would have been motivated to modify the apparatus of Tojo so as to incorporate the catalytic unit of Hartmann in order to provide a safe and effective means for disposing of the hydrogen generated during the electrolytic fluorine generation process of Tojo.

Finally, the person having ordinary skill in the art of hydrogen disposal would have had a reasonable expectation of success in modifying the apparatus of Tojo as described above because (1) both Tojo and Hartmann disclose apparatuses for carrying out an electrolytic reaction; and (2) Hartmann explicitly discloses the use of his catalytic unit in conjunction with an electrolytic cell (e.g. element 1 of Tojo's Fig. 1) in order to remove excess hydrogen produced as a by-product of electrolyte reactions (e.g. the hydrogen produced during the electrolytic fluorine generation process of Tojo).

10. With respect to claim 2, the apparatus of Tojo appears to be modular (see Tojo, Fig. 1).

11. With respect to claim 3, portability alone is not sufficient to patentability distinguish over a prior art device unless there are new or unexpected results. See MPEP 2144.04(V)(A) (citing *In re Lindberg*, 194 F.2d 732 (CCPA 1952)).

12. With respect to claim 4, Tojo discloses wherein the aerosol removal component fills an adsorption column (e.g. "in bed form") (see Tojo, column 7, lines 17-29).

13. With respect to claim 5, Tojo discloses wherein the aerosol removal composition is sodium fluoride or soda lime (see Tojo, column 7, lines 17-29).

14. With respect to claim 6, Tojo discloses wherein nickel is a preferred material of construction for the aerosol removal unit and associated equipment, namely because of its anticorrosive properties (see Tojo, column 7, lines 45-50).

15. With respect to claim 7, Tojo is not limited in any way with respect to the operating temperature of his aerosol removal unit. Thus, Examiner finds that the temperature maintained within the aerosol removal unit of Tojo will be in accordance with those typically observed in other (i.e. similar) processes for the electrolytic production of fluorine. In this regard, Examiner notes that Hodgson discloses a process for the electrolytic production of fluorine wherein a process temperature of about 100°C is maintained throughout (see Hodgson, column 4, lines 62-65; and column 5, lines 18-21).

16. With respect to claims 10 and 11, Hartmann discloses wherein the catalytic unit is operated at a temperature between 50°C and 200°C (see Hartmann, column 4, lines 44-53).

17. With respect to claim 12, Tojo discloses wherein the aerosol removal unit (14) is positioned at a distance from the fluorine generator (1) (see Tojo, Fig. 1). In addition, Hartmann discloses wherein the catalytic unit (6) is positioned at a distance from the electrolytic cell (1) (see Hartmann, Fig. 1).

18. With respect to claim 13, “making integral” of a prior art device is generally held to be a matter of obvious engineering design choice in the absence of new or

unexpected results. See MPEP 2144.04(V)(B) (citing *In re Larson*, 340 F.2d 965 (CCPA 1965)).

19. With respect to claims 14 and 15, Hartmann discloses the use of platinum as a catalyst in the catalytic unit (see Hartmann, column 4, lines 34-43). Moreover, Hartmann is not particularly limited as to the form or shape of the catalytically activated combustion surface. In this regard, Examiner notes that Holt discloses the use of platinum and rhenium supported on metal screens as catalysts for oxidation reactions (e.g. the catalytic oxidation reaction carried out in the catalytic unit of Hartmann) (see Holt, column 1, lines 10-18; and column 3, lines 6-18).

20. With respect to claim 16, Tojo discloses a method comprising the steps of flowing a fluid comprising hydrogen and residual amounts of HF (via hydrogen gas outlet (23) and gas line (28)) from a fluorine generator (1) through an electrolyte removal component (14) comprising an aerosol removal composition (e.g. sodium fluoride or soda lime) (see Tojo, column 7, lines 17-29), wherein the fluid contacts the aerosol removal composition thereby forming a hydrogen-rich fluid reduced in aerosol (see Tojo, Fig. 1; and column 7, lines 17-29).

Tojo does not disclose wherein the method further comprises the step of contacting the hydrogen-rich fluid reduced in aerosol with a catalytically activated combustion surface positioned inside of a forced convection duct, while a gas comprising oxygen flows through the forced convection duct, thereby combusting the hydrogen with oxygen in the oxygen-containing stream.

However, Hartmann discloses a method for the disposal of hydrogen (see

Hartmann, English Abstract) wherein hydrogen-rich fluid is contacted with a catalytically activated combustion surface positioned inside of a forced convection duct (20), while a gas comprising oxygen flows through the forced convection duct (20), thereby combusting the hydrogen with oxygen in the oxygen-containing stream (see Hartmann, Fig. 1; and column 4, lines 18-64). In addition, Hartmann explains that the method of his invention is preferably used to dispose of hydrogen in hydrogen-containing mixtures such as that generated during an electrolyte process (e.g. hydrogen produced in the fluorine generation process of Tojo) (see Hartmann, column 1, lines 3-8). Hartmann also notes that his method provides for the safe disposal of hydrogen without the loss of essential process chemicals (see Hartmann, English Abstract; and column 1, lines 40-46). Finally, Examiner notes that Hartmann is not particularly limited with respect to the form of catalyst to be used in his catalytic unit. In this regard, Holt discloses the use of platinum and rhenium catalytic materials supported on metal screens for use in oxidation reactions, e.g. the catalytic oxidation reaction carried out in the catalytic unit of Hartmann (see Holt, column 1, lines 10-18; and column 3, lines 6-18).

Therefore, the person having ordinary skill in the art of hydrogen disposal would have been motivated to modify the method of Tojo so as to incorporate the catalytic unit of Hartmann in order to provide a safe and effective means for disposing of the hydrogen generated during the electrolytic fluorine generation process of Tojo.

Finally, the person having ordinary skill in the art of hydrogen disposal would have had a reasonable expectation of success in modifying the method of Tojo as described above because (1) both Tojo and Hartmann disclose methods for carrying out

an electrolytic reaction; and (2) Hartmann explicitly discloses the use of his catalytic unit in conjunction with an electrolytic cell (e.g. element 1 of Tojo's Fig. 1) in order to remove excess hydrogen produced as a by-product of electrolyte reactions (e.g. the hydrogen produced during the electrolytic fluorine generation process of Tojo).

21. With respect to claim 18, Tojo discloses a method for generating fluorine comprising the steps of: (a) generating a fluorine-rich stream (exiting fluorine generator (1) through fluorine gas outlet (22)) and a hydrogen-rich stream (exiting fluorine generator (1) through hydrogen gas outlet (23)), the hydrogen-rich stream comprising minor amounts of electrolyte and hydrogen fluoride (see Tojo, column 7, lines 17-29); and (b) routing the fluorine-rich stream to a cleanup train (e.g. HF absorber (15)) to produce a purified fluorine stream (see Tojo, Fig. 1; and column 7, lines 17-50).

Tojo does not disclose wherein the method further comprises routing the hydrogen-rich stream to an apparatus for the oxidative combustion of the hydrogen.

However, Hartmann discloses a method for the disposal of hydrogen (see Hartmann, English Abstract) wherein hydrogen-rich fluid is contacted with a catalytically activated combustion surface positioned inside of a forced convection duct (20), while a gas comprising oxygen flows through the forced convection duct (20), thereby combusting the hydrogen with oxygen in the oxygen-containing stream (see Hartmann, Fig. 1; and column 4, lines 18-64). In addition, Hartmann explains that the method of his invention is preferably used to dispose of hydrogen in hydrogen-containing mixtures such as that generated during an electrolyte process (e.g. hydrogen produced in the fluorine generation process of Tojo) (see Hartmann, column 1, lines 3-8). Hartmann

also notes that his method provides for the safe disposal of hydrogen without the loss of essential process chemicals (see Hartmann, English Abstract; and column 1, lines 40-46). Finally, Examiner notes that Hartmann is not particularly limited with respect to the form of catalyst to be used in his catalytic unit. In this regard, Holt discloses the use of platinum and rhenium catalytic materials supported on metal screens for use in oxidation reactions, e.g. the catalytic oxidation reaction carried out in the catalytic unit of Hartmann (see Holt, column 1, lines 10-18; and column 3, lines 6-18).

Therefore, the person having ordinary skill in the art of hydrogen disposal would have been motivated to modify the method of Tojo so as to incorporate the catalytic combustion unit of Hartmann in order to provide a safe and effective means for disposing of the hydrogen generated during the electrolytic fluorine generation process of Tojo.

Finally, the person having ordinary skill in the art of hydrogen disposal would have had a reasonable expectation of success in modifying the method of Tojo as described above because (1) both Tojo and Hartmann disclose methods for carrying out an electrolytic reaction; and (2) Hartmann explicitly discloses the use of his catalytic unit in conjunction with an electrolytic cell (e.g. element 1 of Tojo's Fig. 1) in order to remove excess hydrogen produced as a by-product of electrolyte reactions (e.g. the hydrogen produced during the electrolytic fluorine generation process of Tojo).

22. With respect to claim 19, Hartmann discloses wherein the oxygen-containing stream is exhaust gases (see Hartmann, entire disclosure).

Response to Arguments

23. Applicant's arguments filed 11 April 2008 have been fully considered but they are not persuasive.

24. Examiner understands Applicant's principal arguments to be:

I. Applicant's aerosol removal unit is used to remove carbon dioxide and water vapor from the hydrogen-rich stream, whereas component 14 of Tojo's Fig. 1 is used to remove HF from the cathode side of the fluorine generator.

II. The catalytic unit 6 of Hartmann is not positioned "in" the forced convection duct 20, but rather is attached to the electrolytic cell 1 through a conduit 20.

III. Utilization of wire screen for the combustion surface requires considerably less precious metal material than the packed beds of Hartmann.

IV. There is no teaching whatsoever in either Tojo or Hartmann that would enable the combination suggested by Examiner.

V. Examiner's statements that "the apparatus of Tojo appears to be modular" has no basis in anything actually presented in the Tojo reference.

VI. Portability provides significant advantages for operation of the present invention and is certainly not contemplated by either Tojo or Hartmann.

VII. Mounting the aerosol removal unit and the catalytic unit on top of the fluorine generator provides significant advantages in space utilization and is certainly not contemplated by either Tojo or Hartmann.

VIII. Hartmann does in fact limit the form and shape of the combustion surface to a platinum or palladium bed.

IX. Examiner's interpretation of Holt is so stretched as to be nearly incomprehensible.

25. With respect to Applicant's first argument, Applicant's claims merely specify "an electrolyte aerosol removal unit . . . containing an aerosol removal composition" (see Applicant's claims 1, 16, and 18). Applicant's claims do not otherwise specify wherein the aerosol removal unit is used to remove carbon dioxide and water vapor. In any event, however, since Tojo explicitly discloses the use of soda lime and sodium fluoride (see Tojo, column 7, lines 26-29) as aerosol removal compositions (which are the same as the preferred aerosol removal compositions disclosed by Applicant) (see Applicant's specification, page 3, paragraph [0009]), Examiner submits that Tojo's aerosol removal compositions would necessarily (i.e. inherently) remove carbon dioxide and water vapor.

26. With respect to Applicant's second argument, Examiner submits that Hartmann clearly discloses wherein the catalytic unit (6) is positioned "in" (i.e. within) the forced convection duct (20). As can clearly be seen in Hartmann's Fig. 1, the catalytic unit (6) is located within the forced convection duct (20), with the forced convection duct (20) being connected on both sides of the catalytic unit (6).

27. With respect to Applicant's third argument, the argument is not persuasive because one cannot show nonobviousness by attacking references *individually* where the rejections are based on *combinations* of references. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); *In re Merck & Co.*, 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986). In this regard, Examiner notes that Holt clearly discloses the use of platinum based catalysts (the same as used in Hartmann) supported on wire screens for use in

vapor phase oxidation reactions (e.g., the vapor phase catalytic oxidation reaction carried out in the catalytic unit of Hartmann).

28. With respect to Applicant's fourth argument, Hartmann also notes that his apparatus provides for the safe disposal of hydrogen without the loss of essential process chemicals. Thus, Examiner submits that the person having ordinary skill in the art would have sufficient motivation to modify the apparatus of Tojo so as to incorporate the catalytic unit of Hartmann in order to provide a safe and effective means for disposing of the hydrogen generated during the electrolytic fluorine generation process of Tojo.

29. With respect to Applicant's fifth argument, Examiner notes that Applicant has defined "modular" to mean "constructed in standardized units and dimensions for flexibility and variety in use" (see Applicant's specification, page 5, paragraph [0022]). Thus, Examiner submits that the apparatus of Tojo (see Tojo, Fig. 1) meets Applicant's very broad definition of a "modular" apparatus.

30. With respect to Applicant's sixth and seventh arguments, the courts have held that merely "making portable" and/or "making integral" the component parts of a prior art apparatus is *not* a sufficient basis upon which to establish patentability of a claimed apparatus. See MPEP § 2144.04(V).

31. With respect to Applicant's eighth argument, Examiner notes that Hartmann discloses the use of fixed bed catalysts. However, Hartmann does not explicitly *require* use of the catalyst in bed form (i.e. particulate catalysts positioned in a fixed bed). Thus, the only strict requirement of Hartmann is to use a suitable catalyst that is fixed in

position (i.e. stationary) within the catalytic unit. The person having ordinary skill in the art would readily recognize that the platinum-based catalysts of Holt, supported on a "fixed" metal wire screen support would be compatible for use in the catalytic unit of Hartmann - i.e. without destroying the operability of Hartmann's apparatus.

32. With respect to Applicant's ninth argument, Holt is directed to catalyst materials (e.g., platinum catalysts) that may be supported on metal wire screen supports for use in vapor phase oxidation reactions. Hartmann is directed to the use of platinum catalysts (on fixed supports) for use in the vapor phase oxidation (i.e. combustion) of hydrogen. Thus, Examiner submits that the metal wire screen supports of Holt are perfectly compatible for use as the support material for Hartmann's platinum catalyst to be used in the vapor phase reduction of hydrogen.

Conclusion

33. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of

the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

34. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Randy Boyer whose telephone number is (571) 272-7113. The examiner can normally be reached Monday through Friday from 10:00 A.M. to 7:00 P.M.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Glenn A. Caldarola, can be reached at (571) 272-1444. The fax number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

RPB10759973

/Glenn A Caldarola/

Acting SPE of Art Unit 1797